

## Potential Climate Risk Management in German Regions: Case Studies in Lusatia, inner part Spree Forest and Ahr Valley Region

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**Status:** open (until 30 Jun 2025)

**Comment types:** **AC** – author | **RC** – referee | **CC** – community | **EC** – editor | **CEC** – chief editor | : Report abuse

- **RC1:** ['Comment on nhess-2024-124'](#), Anonymous Referee #1, 11 Jun 2025 [reply](#)

**AC (– author comment)** *The author expresses the most sincere gratitude for the time and effort that the Reviewer invested in offering feedback on the manuscript provided. The insightful comments and substantial improvements that were suggested will further strengthen this paper. The majority of the first reviewers' suggestions have been or will be integrated, and the upcoming mentioned modifications are or will be emphasized in the manuscript. A reply to the reviewers' concerns and comments is provided in point-by-point detail below.*

**RC ( – referee comment)** This paper has some serious issues with its content and format, which really call into question its scientific relevance, clarity and reliability.

**AC** *Thank you for your valuable feedback on my manuscript. The author appreciates the reviewers' suggestion to strengthen the content and format, and the author will/has revise/d and will continue to revise the complete manuscript accordingly, especially in terms of its scientific relevance, clarity, and reliability. The author believes these upcoming revisions will more effectively contextualize the study's significance, clearly defining the gap in its clarity and highlighting its contribution to more concrete CRM specifications. A clear explanation of the requested methodological areas and steps in Section 2, and, next to others, of case study findings, especially in Sections 5 and 6/ will now be provided.*

**RC 1.** Unclear objectives: Even in the introduction, it remains unclear what the paper actually aims to achieve. No clear research question or hypothesis is formulated; instead, the text remains at a general, descriptive level - the aim is to examine CRM in three different regions. Nor does it become clear in the course of the paper what contribution the work is intended to make to the scientific discussion. There is also no actual, scientifically sound evaluation of CRM in the regions (see also point 3).

**AC 1.** *Unclear objectives: Thanks so much for this insightful comment regarding the unclear objectives. It highlights the necessary shift to clearly present the achieved aims and the need for a clear research request or hypothesis, especially concerning the so far more descriptive, general observation appearance. For instance, in lines 15-18 of the abstract and lines 571-*

574, the described objectives will be integrated and added to the additional essential elements of a research question in the Introduction chapter. So far, the following objectives are named from line 571 on: "Specific objectives of this study were, to understand the theoretical concept of CRM within different climate change impacts while protecting especially terrestrial vulnerable land on regional level. Most beneficial was the interrelation of having included different approaches from the perspective of highly industrialized and highly threatened flooded Ahr Valley and wildfire-concerned and water-scarce Lusatia and inner part Spree Forest region. A further objective of this study was [...]. "

That, such as was stated by the reviewer, "the aim is to examine CRM in three different regions" should strongly get approved again, so that lines 15-18 are implemented as well into the introduction part: "This research analyzed the present CRM-implementation situation and its` behind risks behaviour within processing CRM. The result is a resume for an optimized, innovative and effective Climate Risk Management (CRM)". Overall, this suggestion is appreciated to conduct a regional study to better understand the planning and management dynamics at the regional level. In the Methodology section in lines 131-132, given main (research) request is: "Besides these, by the main request for regional optimization of effective CRM-operationalization settled studies, they were also screened on the future adaptability of more spatially and timely dense disasters while preventing crises situations." In response, more precise objectives will be added to the manuscript, and the research question will be announced as is, approved again, and adapted for the entire research work. The author will/has revise/d and will rewrite/ rewritten the complete introduction accordingly to investigate the underlying in-depth assessment of the similarities or differences or the general relationship and appearance of each region's possible CRM-concept, and now more precisely presented results in Sections 5 and 6 of the then revised manuscript.

In the revised version, the author will clearly rework the exact contribution the paper is intended to make to the scientific discussion. So, this assessment lays the theoretical foundation for studying the mechanisms of regionally induced, optimized CRM implementation and developing prevention and control technologies for better disaster risk preparedness and resilience on the regional planning level.

Thanks to the reviewer for the helpful observations regarding the lack of a scientifically sound evaluation of CRM in the regions. How the author deals with and highlights this area will be described in more detail in my answer to point and referee comment Nr 3.

**RC 2. Methodology:** The methodology is only partly described in a comprehensible manner. It remains unclear how data was collected, selected, and esp. analyzed. The procedure described remains vague, which severely limits reproducibility and scientific validity. The predominant reference to the author's own previous publications is particularly critical. This gives the impression of self-referential argumentation that does not meet scientific standards.

**AC 2. Methodology:** Thank you for your valuable feedback on my manuscript. The author appreciates the reviewer's suggestion to strengthen the methodology description and how and where data were collected, selected, and esp. analyzed. The author has revised/will revise and rewritten/rewrite the complete Methodology chapter accordingly, and therefore, in a comprehensible manner. For instance, the in the Methodology chapter listed – by the reviewer in this state of appearance absolutely correctly as particularly critical declared – own previous research works and partially publications and seemingly predominant reference to the author's own previous publications will get differentiated in a clear fourfold way: (1.) which ones are primary and secondary data and (2.) for which purpose and (3.) in which way they were used. Moreover, (4.) the mixed use, and not only on my own primary and secondary data relying results is/ will be highlighted: in most cases of each of my research entrance steps, I am processing an initial literature review, which also took place over here.

Nevertheless, due to the limitation of meeting the deadline, it did not happen to appear as a further research step, and further sources in this Methodology section so far. That is a greater leaking point and leads to unclear data sources and possibly an unbalanced view, mainly based on my data sources. Also, the entire manuscript will be reapproved regarding the reviewers' statement that it presents a self-referential argumentation, which does not meet scientific standards, and the author will treat this extremely carefully. To constructively rework on that essential difficulty, the entire research work and each sentence and their citations, such as "Many regions in Germany (and worldwide) are suffering from more continuous vulnerability of [...], in this case, Ahr Valley floods (Reinstädler, 2022a; 2022b; 2022c; 2023a; 2023b) and partially [...])" will get approved and for sure further literature from other researchers will be added. Those are the best available and should verify the argumentation chain in a more neutral and securing way.

To further address these issues, this paper conducted a large-scale investigation of typical CRM-conceptions and general regional aspects of CRM (please compare the Sections of 3 and 4 as partial more general results) while through fieldwork, and so primary, but also secondary data and literature research on these areas, it was established a balanced research work and found that the processing way in all observed regions is less fulfilling the standards of the United Nations Office for Disaster Risk Reduction (UNDRR, formerly known as UNISDR) created flagship initiative of the "Comprehensive Disaster and Climate Risk Management" (UNDRR, 2022a). However, more single-step initiatives of the (single) concepts around the comprehensive risk management (BMZ, 2019a, in cooperation with the German Association for International Cooperation (GIZ) GmbH, Bonn, Germany) are fostered on the regional level. Practicability advantage of this possible, second processing way is, that the administrative division in several-(multi-)sector-treatment of different "sub-topics", such as climate adaptation, mitigation, or disaster risk and crisis management is fitting and can be best adapted into the communal, regional offices and (federal state) ministries work flow and processing way. To enhance flexibility, interoperability, and streamline processes, the author of this manuscript sees a greater chance in creating at least at the state level a coordinating instance, where all these single initiatives get bundled into a disaster risk reduction plan and unit. This part of the result will be implemented more concretely, but can only be treated as a

*preliminary result and will be named as such. Further research would need to focus on this single area. This part of the result will be implemented more concretely.*

*Thanks further to the reviewer for the helpful observations regarding the vague described procedure, which severely limits reproducibility and scientific validity. The author will also clarify how further data sources have counter-referenced and rechecked own results in order to ensure the most transparent, reproducible, scientifically valid, and trustworthy processing way. These revisions will/not only appear in the Introduction section, the same as in the main part and especially within the main Results Sections of 5 and 6, but also especially in the Methodology section and then a better contextualization of the study's trustworthiness, reproducibility and, up to that, relevance within the current discourse on DRM-concepts on regional level will get more obvious.*

**RC 3.** Selection and implementation of case studies: The selection of case studies appears arbitrary and unjustified. There are no criteria for why these particular examples were chosen, and above all, there is no systematic comparison. The three regions are not compared with each other, so why are they presented at all? Furthermore, the distinction between Lusatia and the inner part of the Spree Forest is not clear to me - in my opinion, no distinction is made in the paper either. Instead of analytical depth, the presentation remains superficial.

**AC 3.** *Thanks so much for this important comment regarding the selection and implementation of case studies. In response, the author will now include an in-depth criteria assumption to validate the accuracy of case study selection. Specifically following will be summed up in the introduction (and methodology) section:*

- "terrestrial inhabitants for natural hazards are displayed next to dry land ecosystems, wetlands, and low mountain ranges with their cultural and natural landscapes "(comp. lines 12-13);*
- "[...] current threats for rural and urban areas in worldwide and German regions such as Ahr Valley or Lusatia, which inhabits Spree Forest. Therefore, the high risks and spatially exposed situations of here so far more terrestrial inhabitants are displayed (comp. lines 21-23);*
- "Many regions in Germany (and worldwide) are suffering from more continuous vulnerability of [...], in this case, Ahr Valley floods (Reinstädler, 2022a; 2022b; 2022c; 2023a; 2023b) and partially more continentally continuous drought disasters such as the hydrological droughts in Lusatia Region especially in the years of 2018 to 2020 (Creutzfeldt, B. et al., 2023, p. 12, 29-32)" (comp. lines 40-43). So, it can and will be summed up that the main selection criteria for choosing these regions are the occurrence of hydrological disasters in their wide range, from floods in one region to droughts in the other. This selection is also based on previous studies and the creation of the also here named CA(LU)<sup>2</sup>WA-model, which includes the concept of Integrated Drought and Water Management, making those regions extremely essential for DRM.*
- European, partially more continental regions (comp. Line 50);*
- And further in-depth criteria will be/have been added.*

*The reasoning behind this was becoming clearer to the author, and hopefully, a revision will lead to a clearer and more justifiable overall processing. These processing enhancements include describing the systematics behind the comparative assessment within the Introduction and especially the Methodology section. Where necessary, new subsections will be implemented. Thank you very much for these essential hints.*

*Moreover, although the author obviously did not describe and depict a comparative assessment in a overseeable way, the author is sure to successfully rework on it just after the statement by Sun Tzu: "The ground gives rise to measurement, measurements give rise to assessments, assessments give rise to calculations, calculations give rise to comparisons, and comparisons give rise to victories" (as cited in Taillard, 2014, p. 37). I highly appreciate this suggestion, which helps improve the understanding of this research format. In response, the process of the comparative assessment will be reworked on, such as named above and in case of the following parts being reworked on in a more comparable and in depth way: a more general entry step into a fulfilled verbal-argumentative assessment on regional aspects of climate risk management, up to a climate risk status-quo observation in German regions, including climate disposition (with precipitation rate, total renewable water resources) and in the next step on each case study region a comparable climate risk status-quo observation, also including climate disposition. Up to that point, each region's specifics will be declared, such as for Lusatia drought risk, up to a development chain corresponding to land (use) and landscape development being dependent on, next to others, water availability (comp. Fig. 4). So, several parts of the manuscript will get/were revised and reorganized to improve the clarity and logical flow of the comparative assessment.*

*Thanks so much for your valuable observation regarding the consistency about the distinction between Lusatia and the inner part of the Spree Forest. In response to this comment, the author has re-evaluated the distinction of both and found that – and such as described by the reviewer – no distinction is made in the paper either, which has to be renewed and changed, because due to geomorphological, water, soil and natural and cultural specifications the subdivision into Spree Forest region in the study area is most essential and will get/has been described newly with the necessary assumptions and with analytical depth.*

**RC 4.** Inadequate elaboration of the case studies: Although these "case studies" are repeatedly referred to, there are mainly general sections with largely descriptive content and no structured analysis. There is no real in-depth examination of the case studies. Were the findings actually gained from work in these regions?

**AC 4.** *Thanks so much for the constructive comments regarding the transparency and clarity of the elaboration of the case studies. The reasoning behind this was becoming clearer to the author, and the revision needed will be/was processed, as described already under AC 3. Up to that area of change, those points will be rechecked through a more structured analysis, in-depth examination of the case studies, and an examination of where the findings were actually gained from work in these regions.*



**RC 5.** Language: The language is sometimes imprecise in places, colloquial, and contains minor spelling errors (also in Fig. 5). Some terms are used incorrectly (risk, vulnerability), which leads to additional confusion.

*AC 5. Thank you for your valuable feedback on language precision. The author appreciates your suggestion to strengthen the language and will rework on imprecise terminologies in places, colloquial, and correct minor spelling errors (mistakes found and corrected in Fig. 5). Furthermore, regarding the incorrectly used terms the author highlights in the line 151-152 a definition, of what a risk in general is constituted of and therefore brings up the correlation between risk and vulnerability: "Moreover, the interaction of vulnerability (of the affected system), its exposure over time (to the hazard), and the (climate-related) hazard with the likelihood of its occurrence makes up a risk (GIZ, 2021, p. 15) ". Nevertheless, terms will be approved again in their correct placement and usage form.*

**RC 6.** Figures: The figures in the paper are blurry and in some cases have no apparent relevance to the text. Sometimes, they do not contribute to understanding or argumentation and appear more like filler than analytical visualizations. Esp. Fig. 4 is unclear to me.

*AC 6. Thanks so much for these valuable comments regarding the figures. In response to this feedback, several improvements will be/ have been made to the manuscript. Firstly, the descriptions and interpretations of each figure and graph were enhanced, providing clear explanations of their significance within the context of the study. It will get/has been ensured that each figure and graph is now accompanied by a detailed explanation of its role in supporting the findings, including how it contributes to the broader understanding of the relationship between the figure and context. It will get/has also explicitly connect the visual data to the specific conclusions they support, making the results easier to interpret and understand. Furthermore, it will get/was ensured that each section of the paper refers to the relevant figures clearly and consistently.*

*The author trusts these changes improve the clarity and impact of the manuscript, making it more engaging and easier to comprehend. Thanks so much again for these thoughtful suggestions.*

**RC 7.** Conceptual vagueness: Numerous (theoretical) concepts are introduced but only dealt with superficially. Terminology is not always defined, so that key terms are used inflationarily and unsystematically (CRM, CCA, DRR, RS etc.). But what is e.g. the CALUWA application?? A consistent theoretical framework is lacking. It is also unclear why Chapter 6, for example, contains a great deal of general information about climate change in Germany and the probability of dozens of different disasters. This makes no sense at all in this context, especially since the report is not about volcanoes or tornadoes. Moreover, ThinkHazard does not appear to be a particularly good source either.

*AC 7. The reasoning behind this was becoming clear to the author, and hopefully possible revision will be processed to address the conceptual vagueness and get it intensively approved. The two different general processing approaches for DRM (comp. Section 3) are essential for a later estimation in the context of the current (status-quo) situation in the*

*regions. While approving that part, I have to acknowledge that exactly this transference is so far missing and will be added, as already described in the comment and point 2:*

*To further address a greater planning processing overview, this paper conducted a large-scale investigation of typical CRM-conceptions and general regional aspects of CRM (please compare the Sections of 3 and 4 as partial more general results) while through fieldwork, and so primary, but also secondary data and literature research on these areas, it was established a balanced research work and found that the processing way in all observed regions is less fulfilling the standards of the United Nations Office for Disaster Risk Reduction (UNDRR, formerly known as UNISDR) created flagship initiative of the "Comprehensive Disaster and Climate Risk Management" (UNDRR, 2022a). However, more single-step initiatives of the (single) concepts around the comprehensive risk management (BMZ, 2019a, in cooperation with the German Association for International Cooperation (GIZ) GmbH, Bonn, Germany) are fostered on the regional level. Practicability advantage of this possible, second processing way is, that the administrative division in several-(multi-)sector-treatment of different "sub-topics ", such as climate adaptation, mitigation, or disaster risk and crisis management is fitting and can be best adapted into the communal, regional offices and (federal state) ministries work flow and processing way. To enhance flexibility, interoperability, and streamline processes, the author of this manuscript sees a greater chance in creating at least at the state level a coordinating instance, where all these single initiatives get bundled into a disaster risk reduction plan and unit. This part of the result will be implemented more concretely.*

*To address potential inconsistencies in the parallel use of numerous (theoretical) concepts, a more in-depth explanation will have/has been included, coupled with figures 2 and 3, to ensure proper understanding of the importance of having those viewpoints within the different necessary concepts. Up to that point, it is mirroring exactly the multi-purpose usage of those named key terms in administrative conceptual practice. Those correlations into practice will get deepened as well. Those key terms (CRM, CCA, DRM) are, in most cases, so far implemented in Figure 3, and the author will approve the non-inflationary usage of those. As we are within the topic of disaster risk management, I am not sure if some of the key terms are common practice and, therefore, still need to be defined for the reader? Within that part, I am so far unsure, but I can add all necessary definitions for sure.*

*Moreover, truly, the one notification of the self-developed and applied CA(LU)<sup>2</sup>WA-framework in the manuscript is not described at all, but is named, which surely has to be reworked. A long-term research work is standing behind this CA(LU)<sup>2</sup>WA-framework, which also enhanced decision-making about which regions were chosen for this research. It should actually have been transparently explained, and will get implemented.*

*Additionally, it will be/has been included detailed explanatory text in the manuscript, especially about and in Section 6, discussing why a climate risk status quo with all the climate change-related and different potential disaster risks in Germany is an essential analysis for confirming a general risk predestination.*

*Thanks so much again for the constructive comments regarding citations and secondary data usage of ThinkHazard, which is a common source for practitioners, project managers, and the disaster risk management community at various scales, including the World Bank. It was*

*developed by the Global Facility for Disaster Reduction and Recovery (GFDRR) with several universities, including the University of Canterbury and the University of Amsterdam, also participating in the development process. The author will approve including further data sources to re-investigate transparent data sources.*

**RC Conclusion:** In its current form, the paper does not meet the requirements for a scientific publication in terms of either content or form. It lacks clarity, methodology, analytical depth, and theoretical foundation. A fundamental revision is urgently needed, with a particular focus on developing a common thread, a clear research objective, transparent methodology, and clear scientific argumentation, where the case studies are actually used for analysis and the conclusions are drawn from the previous analysis.

**AC Conclusion:**

*Thanks to the reviewer for the helpful observations regarding the content, form, and common threats of the manuscript and the formulation of the problem statement, alongside the clear research objectives. In response, while the entire manuscript will be observed and reworked on, several parts of the manuscript will be/were fundamentally revised and reorganized to improve clarity, transparent methodological and analytical depth, with clear scientific argumentations and a theoretical foundation.*

*Additionally, new case study assessment parts will be/have been added where appropriate, based on the valuable suggestions from the reviewers, to enhance the depth and coherence of the content. Also, the problem statement and research objectives were refined, respectively strengthened, to ensure they are more rigorous, clearly articulated, and objectively presented. These revisions appear in the Introduction section and the Methodology section (next to the Abstract), and they better contextualize the study's relevance within the current discourse on case study comparisons. Also, the author examines and fundamentally rewrites the Conclusion section, so that they are drawn from the previous analysis. So, the conclusions will be restructured to improve readability and coherence, ensuring that they are presented in a more structured and digestible format in direct correlation to the previous analysis. Similar findings will be/have been grouped, making the key points of the entire assessment more accessible and facilitating a smoother reading experience. The author trusts these changes improve the clarity and impact of the manuscript, making it more engaging and easier to comprehend. Thanks so much again for these thoughtful suggestions, and I look forward to further feedback on the revised version, if possible, to resubmit.*

*The author further believes these changes will/have strengthened/ed the manuscript's structure and scientific framing. Moreover, the reviewer's guidance is sincerely appreciated. Thanks so much for the constructive comments and your highly valuable feedback, and the time spent on my manuscript. I appreciate all your suggestions and recommendations, which will help improve the scientific rigor of this study. Thanks so much again for this insightful feedback.*